

# GAM run 05-02

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Texas Water Development Board  
Groundwater Availability Modeling Section  
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## **REQUESTOR:**

Ms. Belynda Rains, General Manager, Clear Fork Groundwater Conservation District

## **DESCRIPTION OF REQUEST:**

Ms. Rains requested the water budget in Fisher County from the Groundwater Availability Model (GAM) of the Seymour aquifer (Ewing and others, 2004) for the years 2005 through 2011. We also calculated water volumes for Fisher County for the 2000 to 2050 decadal years.

## **METHODS:**

To address the request, we:

- Ran the GAM with average recharge for 2000 through 2050.
- Took budget information from the GAM and converted it to acre-feet per year.
- Calculated the volume of water in the aquifer using information from the GAM and assumed values of specific yield.

## **PARAMETERS AND ASSUMPTIONS:**

- We used recharge values that represent average conditions from 2005 through 2050.
- The GAM uses pumpage based on the 2001 Brazos G Regional Water Planning Plan. We made no changes to the pumpage in the original GAM.
- We assumed a specific yield of 0.15 for the Seymour aquifer, the value used in the GAM.
- We estimated volume of water in the aquifer by subtracting the elevation of the aquifer bottom (from the GAM) from the elevation of GAM calculated water levels and multiplying by the appropriate area and the specific yield.

## **RESULTS:**

The volume of groundwater in the Seymour aquifer in Fisher County is shown in Table 1. The water budget for Fisher County is shown in Table 2

## REFERENCES:

Ewing, J. E., Jones, T. L., Pickens, J. F., Chastain-Howley, A., Dean, K. E., and Spear, A. A., 2004, Groundwater availability model for the Seymour aquifer: final report prepared for the Texas Water Development Board by INTERA Inc., 432 p.

Table 1: Volume of groundwater in the Seymour aquifer in Fisher County by decade.

	Water volumes in acre-feet			Seymour aquifer			
County	2000	2010	2020	2030	2040	2050	2060
Fisher	380,000	380,000	370,000	370,000	370,000	370,000	370,000

Values rounded to two significant figures.

Table 2: Water budget for Fisher County (values in acre-feet per year).

County	Year	Stor In	Stor Out	X-In	X-Out	LwExcIn	LwExcOut	Wells	Spring	Recharge	ET	StrLeak in	StrLeak out	Total_In	Total_Out	%Diff
<b>Fisher</b>	2005	-740	925	0	-516	4,444	-4,533	2,931	0	11,087	-4,088	188	-3,834	16,644	-16,643	0
	2006	-716	898	0	-517	4,432	-4,559	2,919	0	11,117	-4,086	187	-3,834	16,634	-16,631	0.02
	2007	-685	872	0	-517	4,423	-4,565	2,908	0	11,117	-4,088	187	-3,834	16,599	-16,598	0
	2008	-658	812	0	-518	4,413	-4,484	2,895	0	11,063	-4,091	187	-3,833	16,475	-16,479	-0.02
	2009	-632	789	0	-518	4,405	-4,470	2,883	0	11,048	-4,092	187	-3,832	16,429	-16,426	0.02
	2010	-611	747	0	-518	4,395	-4,411	2,869	0	11,009	-4,094	187	-3,830	16,338	-16,334	0.03
	2011	-584	735	0	-519	4,388	-4,417	2,870	0	11,009	-4,096	187	-3,828	16,319	-16,314	0.03

1. Stor In – Water going into storage
2. Stor Out – Water coming out of storage
3. X-In – Water moving horizontally into the county
4. X-Out – Water moving horizontally out of the county
5. LwExcIn – Water moving vertically into the layer
6. LwExcOut – Water moving vertically out of the layer
7. Wells – pumpage from wells
8. Spring – spring flow
9. Recharge – recharge to the county
10. ET – Evapotranspiration out of the county
11. StrLeak In – water leaking out of the streams into the aquifer
12. StrLeak Out –water leaking into the streams out of the aquifer
13. Total\_In – total amount of water moving into the county and into storage
14. Total\_Out –total amount of water moving out of the county or out of storage
15. %Diff – percent difference between Total\_In and Total\_Out